

REMARKS

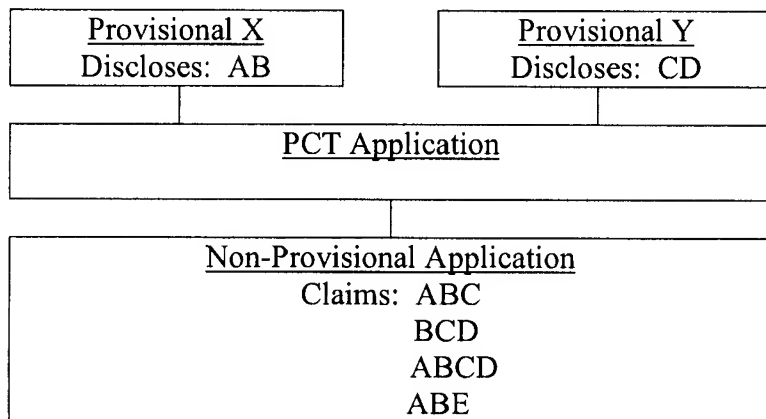
Claims 2-27 are present in the application. In view of the remarks that follow, Applicants respectfully request reconsideration.

English Translation Enclosed

The Office Action cites a new reference that is in the Japanese language (Fukami PCT Application Publication No. WO99/49504). Applicants have in hand an informal English machine translation of Fukami. As a courtesy to the Examiner, Applicants are enclosing a copy of this translation. Due to the fact that it is an informal machine translation (i.e. an automated computer translation), Applicants do not represent that the translation is necessarily accurate or complete.

Preliminary Comment Regarding Hazelton

The present Office Action contains claim rejections based on Hazelton U.S. Patent Application Publication No. 2006/0023185. The Hazelton '185 publication claims the priority of a PCT application, which in turn claims the priority of two provisional applications. To predate the present application, the Examiner must rely on the filing date of one of the two provisionals. The diagram below shows a hypothetical situation that is similar:



In the diagram above, the non-provisional application claims the priority of the PCT application, and the PCT application claims the priority of each of the provisional applications. But this does not mean that the non-provisional application is automatically entitled to the priority of either or both provisional applications. More specifically, the non-provisional application contains a claim to the combination ABC, but this claim is not entitled to the priority of either provisional application, because neither provisional application discloses the specific combination ABC. Similarly, the non-provisional application contains a claim to the combination BCD, but this claim is not entitled to the priority of either provisional application, because neither provisional application discloses the specific combination BCD. In addition, the non-provisional application contains a claim to the combination ABE, but this claim is not entitled to the priority of either provisional application, because neither provisional application discloses the element "E", much less the specific combination ABE. Further, the non-provisional application contains a claim to the combination ABCD, but this claim is not entitled to the priority of either provisional application, because even though provisional application X discloses AB and provisional application Y discloses CD, neither provisional application discloses the entire combination ABCD.

Turning to the present application, and as Applicants have previously pointed out, to the extent any rejection relies on subject matter from the Hazelton '185 non-provisional application, the Examiner must carry the burden of making a separate and independent showing that all of the subject matter relied on for the rejection is fully disclosed in each of (1) one and only one of the provisionals, (2) the PCT application, and (3) the Hazelton U.S. publication. The Office Action fails to do so. For example, as to some claims (such as dependent Claims 2-5, 10, 14, 16-18 and 23-27), the Examiner fails to make any showing at all with respect to the provisional and PCT. And as to other claims (e.g. independent Claims 6, 9 and 20), there is only a vague reference to the PCT application and/or the provisional(s), which falls well short of the Examiner's burden of proof. Similarly, from line 20 on page 16 through line 5 on page 17 in the present Office Action, the Examiner makes a conclusory and unsupported assertion that all of the subject matter relied

on from Hazelton '185 is in fact disclosed in the PCT application and the provisionals. However, unsupported conclusory assertions fall well short of the Examiner's burden of proof. In previously-filed Responses, Applicants have repeatedly pointed out that the Examiner has failed to carry the burden of establishing that Hazelton '185 is actually prior art with respect to each and every rejected claim. In the present Office Action, the Examiner has still not bothered to properly carry the burden of establishing that, as to the specific subject matter for which the Examiner relies on Hazelton '185, Hazelton is actually prior art with respect to each and every rejected claim.

Independent Claim 15 - Fukami

Independent Claim 15 stands rejected under 35 U.S.C. §102 as anticipated by newly-cited Fukami PCT Publication No. WO99/49504. This ground of rejection is respectfully traversed, for the following reason.

Claim 15 includes means-plus-function limitations., and the Examiner improperly interprets the "means" limitations. In more detail, MPEP §2182 explains that examination of a means-plus-function limitation must involve the following "two-step" analysis:

1. In the first step, the Examiner must show that the prior art reference performs identically the same function that is specified in the means-plus-function limitation.
2. If and only if the requirement in the first step is met, then in the second step the Examiner looks to the specification and identifies all structure corresponding to that function, and then must show that the prior art structure or step is identical or equivalent to the structure, material, or acts described in the specification.

On page 17 of the Office Action, the Examiner acknowledges that it is necessary to use this two-step analysis. However, the Examiner does not actually do this two-step analysis. Instead, in explaining the §102 rejection of Claim 15 on pages 2-3 of the Office Action, the

Examiner completely skips the first step, and attempts to address only the second step. For example, Claim 15 calls for "means for providing a surfactant to the first fluid" and, under the first step of the analysis, the Examiner must show Fukami has structure that performs exactly this recited function. But in explaining the rejection, the Examiner never identifies any surfactant in Fukami, never identifies any structure that provides a surfactant to any fluid, and never explains how Fukami performs exactly the same function that is recited in this limitation from Claim 15. Accordingly, it is respectfully submitted that the §102 rejection of Claim 15 is not complete and is thus defective, and it is respectfully submitted that the §102 rejection must be withdrawn. As noted above, Applicants are enclosing an informal English machine translation of Fukami. Although Applicants do not represent that the translation is necessarily accurate or complete, it is noted that the translation mentions replacing a dirty lens, but does not appear to contain any mention of the use of any surfactant, or any cleaning liquid.

From line 11 on page 2 to line 7 on page 3 of the Office Action, the Examiner attempts to carry out only the second step of the two-step analysis, by taking each of Applicants' "means" limitations and correlating the recited function to structure. However, as explained in the MPEP, the first step of the analysis is a precondition to performing the second step of the analysis. In particular, the Examiner must first carry out the first step of the analysis and successfully show identity of function. Then and only then can the Examiner continue and attempt to carry out the second step. In the present Office Action, the Examiner completely ignores the first step and attempts to address only the second step, but that does not constitute a proper analysis.

Moreover, in attempting to perform only the second step, the Examiner takes each means limitation from Claim 15 and replaces it with structural language formulated by the Examiner, thereby effectively producing a completely rewritten version of Claim 15. The Examiner then asserts that this rewritten claim is anticipated by Fukami. However, the rewritten claim is significantly different in scope from and does not correlate to Applicants' Claim 15. For example, the Examiner takes Applicants' recitation of "means for providing a surfactant to the first fluid" and asserts that this is nothing more than "a secondary supply reservoir". However, a

secondary supply reservoir is not capable by itself of actually carrying out the recited function of "providing a surfactant to the first fluid". Ultimately, by skipping the first step of the two-step analysis, and by improperly carrying out the second step, the Examiner manages to completely and improperly ignore certain distinctive functional language that is expressly recited in Claim 15. But if this functional language is properly taken into account in the manner required by the MPEP, it clearly distinguishes Claim 15 from Fukami.

For the reasons discussed above, it is respectfully submitted that independent Claim 15 of the present application is not anticipated under §102 by the indicated portions of Fukami. Accordingly, Claim 15 is believed to be allowable, and notice to that effect is respectfully requested.

Independent Claim 15 - Deng and Hazelton

Independent Claim 15 stands rejected under 35 U.S.C. §103 as obvious in view of a proposed combination of newly-cited Deng U.S. Patent Application Publication No. 2005/0164502 and Hazelton '185. This ground of rejection is respectfully traversed. In this regard, the PTO specifies in MPEP §2142 that:

The examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. If the examiner does not produce a *prima facie* case, the applicant is under no obligation to submit evidence of nonobviousness.

Applicants respectfully submit that Deng and Hazelton '185 fail to establish a *prima facie* case of obviousness under §103 with respect to Claim 15, for reasons discussed below.

On page 11 of the Office Action, the Examiner admits that Deng does not disclose the recited "means for providing a surfactant to the first fluid to form a second fluid to reduce an adherence of floating defects to the wafer or the objective lens". The Examiner therefore turns to

Hazelton '185. In the last paragraph on page 11, the Examiner asserts that Hazelton '185 discloses in Figure 10:

. . . the pipe on top of a valve #25 . . . which is fully capable of providing a surfactant to the immersion liquid to reduce an adherence of floating defect to the wafer or the optical element.

However, as discussed above, when analyzing a means-plus-function limitation, examiners are required to show that the reference actually performs identically the same function that is recited in the means limitation. But in the present situation, there is no identity of function, because the indicated structure in Hazelton '185 does not actually perform Applicants' recited function of "providing a surfactant to the first fluid", or Applicants' recited function of reducing "an adherence of floating defects to the wafer or the objective lens".

More specifically, as to "providing a surfactant to the first fluid", the Examiner asserts that the valve 25 in Hazelton '185 is "capable of" performing this function, but that is not the issue. To make the required showing of identity of function, the Examiner must show that Hazelton '185 specifically teaches performing exactly this recited function. But the indicated portion of Hazelton '185 does not teach performing exactly this function. To the contrary, and focusing on function, Hazelton '185 teaches that separate and distinct fluids are used (1) for immersion lithography and (2) for cleaning. For example, the abstract of Hazelton '185 discusses both an "immersion liquid" and a "cleaning liquid", explaining that:

. . . a fluid-supplying device serves to supply an immersion liquid into this gap such that the supplied immersion liquid contacts both the optical element and the workpiece during an immersion lithography process. A cleaning device is incorporated for removing absorbed liquid from the optical element during a

cleanup process. The cleaning device may make use of a cleaning liquid having affinity to the absorbed liquid The cleaning liquid may be supplied through the same fluid-applying device provided with a switching device such as a valve.

Moreover, in regard to Figure 10, Hazelton '185 explains in paragraph [044] that:

[0044] FIG. 10 shows a different approach to the problem of cleaning the last-stage optical element 4 by applying a cleaning liquid on its bottom surface by using the same source nozzles 21 used for supplying the immersion liquid 7. For this purpose, a switch valve 25 is inserted between the supply nozzle 21 and the liquid unit 5 such that the immersion liquid 7 and the cleaning liquid can be supplied selectively through the supply nozzle 21.

In other words, Hazelton '185 teaches that, by using the valve 25 of Figure 10, it is possible to "selectively" supply either (1) immersion liquid or (2) cleaning liquid through the supply nozzle 21, but not both at the same time. Contrary to the assertions in the Office Action, the indicated portions of Hazelton '185 do not teach that the valve 25 is actually used to mix the cleaning liquid with the immersion liquid. In fact, if Hazelton did actually mix the cleaning liquid with the immersion liquid, the cleaning liquid would be rendered completely ineffective. In particular, as evident from the text quoted above, Hazelton '185 teaches a cleaning liquid that attracts the immersion liquid, and in particular that can extract the immersion liquid from a lens. But if this cleaning liquid is mixed with the immersion liquid, its ability to attract the immersion liquid would immediately be used up, and the cleaning liquid would no longer be capable of extracting immersion liquid from a lens. Hazelton's cleaning liquid can only do its job if it is used completely separately from the immersion liquid. Therefore, and contrary to the assertions

in the Office Action, Hazelton would never mix his cleaning liquid with his immersion liquid. This is why the indicated portions of Hazelton never mention any such mixture, because it would render Hazelton's cleaning liquid inoperative and thus unsatisfactory for its intended purpose. As explained in MPEP §2143.01, if a proposed modification would render a prior art element unsatisfactory for its intended purpose, then the modification is not obvious.

A further consideration is that, to the extent Claim 15 recites that providing a surfactant to the first fluid forms "a second fluid to reduce an adherence of floating defects to the wafer or the objective lens", Hazelton's system does not perform this specific function. The cleaning liquid disclosed in Hazelton '185 is different from the surfactant-containing fluid recited in Claim 15. Hazelton '185 teaches a cleaning liquid that attracts the immersion liquid, and that can extract the immersion liquid from a lens. That is, the cleaning liquid in Hazelton is designed specifically to attract the immersion liquid, rather than to reduce adherence of floating defects to the wafer or lens. The indicated portion of Hazelton '185 does not contain any teaching that the cleaning liquid can reduce the adherence of floating defects to a wafer or a lens. Thus, the cleaning liquid in Hazelton '185 is different in composition and function from the surfactant-containing fluid recited in Claim 15.

For the reasons discussed above, it is respectfully submitted that independent Claim 15 of the present application is not rendered obvious by Deng and Hazelton '185. Accordingly, Claim 15 is believed to be allowable, and notice to that effect is respectfully requested.

Independent Claims 6, 9 and 20

Independent Claim 6 stands rejected under 35 U.S.C. §103 as obvious in view of a proposed combination of Hazelton '185 with Zhang U.S. Patent Application Publication No. 2005/0161644 and Amblard U.S. Patent No. 7,056,646. Independent Claim 9 stands rejected under 35 U.S.C. §103 as obvious in view of a proposed combination of Hazelton '185 with Lyons U.S. Patent No. 7,125,652 and the Amblard patent. Independent Claim 20 stands rejected under 35 U.S.C. §103 as obvious in view of a proposed combination of Hazelton '185

with Amblard. These three grounds of rejection are all respectfully traversed, for the following reasons.

HAZELTON HAS NOT BEEN SHOWN TO BE PRIOR ART

Hazelton '185 is the primary reference in the §103 rejections of each of Claims 6, 9 and 20. As discussed in more detail above, the Examiner has the burden of proving several points that are all necessary to properly establish that teachings in Hazelton '185 constitute "prior art" with respect to the present application. But to date, the Examiner has failed to prove all of the necessary points. Absent proof of each of these points, the Examiner has failed to carry the burden of proving that any teachings from Hazelton '185 qualify as prior art with respect to Claims 6, 9 and 20 the present application. For example, the Office Action discusses in detail where relevant subject matter is believed to be disclosed in the Hazelton '185 publication, but merely makes vague and conclusory assertions that this same subject matter is also disclosed in the PCT application and the two provisional applications. The disclosures of the provisional applications are different from the disclosures of the PCT and U.S. applications. For a proper rejection, the Examiner would need to supplement the detailed discussion of the U.S. '185 publication with a separate and comparably detailed discussion of one of the provisional applications, plus a separate and comparably detailed discussion of the PCT application.

A further and separate problem is that, in rejecting each of Claims 6, 9 and 20, the Examiner refers to both provisional applications rather than to one provisional application. If the Examiner intends to rely on both provisional applications, then the Examiner must make a prima facie showing that it would be obvious to modify the subject matter of one provisional application in view of the other provisional application. Otherwise, the Examiner is only permitted to rely on one of the two provisional applications. On page 20 of the Office Action, the Examiner asserts that because Hazelton '185 (the non-provisional application) claims priority to both provisionals, the Examiner can rely on both provisional applications without making a prima facie showing that it would be obvious to modify the subject matter of one provisional in

view of the other provisional. However, the Examiner's position on this point is contrary to well-established law (and PTO policy) regarding the operation of priority claims.

For these separate and independent reasons, the §103 rejections of Claims 6, 9 and 20 that are based in part on Hazelton '185 are all defective, and each fail to properly establish a prima facie case of obviousness. As a result, it is respectfully submitted that the rejections of Claims 6, 9 and 20 based on Hazelton '185 are each incomplete and improper, and must be withdrawn.

PTO CANNOT ESTABLISH OBVIOUSNESS WITH ART THAT TEACHES AWAY

In evaluating obviousness under §103, it is not proper to selectively consider only part of a reference, while ignoring other parts that teach away from the invention. In this regard, the provisions of MPEP §2141.02 specify that:

A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. (Emphasis in original).

In the present application, Claim 6 includes a recitation of:

performing a light exposing operation on the wafer using
an objective lens immersed in a first fluid containing surfactant;
and

cleaning the objective lens after the light exposing
operation using a second fluid having a higher surfactant
concentration than the first fluid.

Claim 9 includes a recitation of:

performing a light exposing operation on the wafer using
an objective lens immersed in a first fluid that does not contain
surfactant; and
cleaning the objective lens using a second fluid comprising
a surfactant-spiked water immersion fluid.

Claim 20 includes a recitation of:

performing a light exposing operation on the wafer using
an objective lens immersed in a first fluid; and
cleaning the objective lens using a second fluid containing
surfactant.

As to the “cleaning” recited in each of Claims 6, 9 and 20, the Office Action admits that Hazelton '185 does not disclose the use of a liquid containing a surfactant, even when considered with either Zhang or Lyons. Therefore, in each rejection, the Examiner turns to Amblard, and in particular relies on a surfactant-containing liquid disclosed in Amblard. However, Amblard teaches that this liquid, which includes a base developer, is specifically intended for use as an immersion liquid during immersion lithography. Amblard repeatedly points out that, since the immersion liquid contains a base developer, the need for a separate development step after patterning is avoided, so that the immersion lithography is more efficient. (For example, this is discussed by Amblard in lines 58-67 in column 1, lines 8-10 and 46-58 in column 2, lines 58-60 of column 7, and lines 47-50 of column 8). In the present Office Action, the Examiner asserts that Amblard’s liquid (which contains a developer) could be used as a cleaning liquid, and in particular could be contacted with the immersion lithography arrangement after the immersion

liquid is removed. However, Amblard explicitly teaches away from this, by repeatedly stating that "A developer is not contacted with the immersion lithography arrangement after the immersion lithography fluid is removed" (for example lines 58-60 of column 7, and lines 47-50 of column 8).

In the text running from line 10 on page 19 through line 2 on page 20 of the Office Action, the Examiner asserts in effect that, even if Amblard teaches away, Hazelton '185 does not teach away, and Hazelton therefore permits the Examiner to ignore the portions of Amblard that do teach away. However, the Examiner's position is contrary to the position of the U.S. courts, and is also contrary to the official position of the PTO (for example as set forth in MPEP §2141.02). Evaluating the present situation using the standard of the courts and the PTO (rather than the Examiner's own inconsistent standard), Amblard does in fact teach away from the subject matter of Claims 6, 9 and 20. Moreover, even assuming Hazelton '185 does not teach away, that does not somehow overrule the fact that Amblard does teach away. Consequently, and contrary to the assertions of the Examiner, the proposed combination involving Amblard would not be obvious.

Since it is well recognized that teaching away from a claimed invention is a per se demonstration of lack of prima facie obviousness, it is respectfully submitted that Hazelton '185 and Amblard do not factually support a prima facie case of obviousness under §103 with respect to any of Claims 6, 9 and 20, with or without regard to Zhang and Lyons. Accordingly, it is respectfully submitted that Claims 6, 9 and 20 are not obvious under §103 in view of Hazelton '185 and Amblard, considered with or without Zhang and Lyons. Notice to that effect is respectfully requested.

For each of the separate and independent reasons discussed above, it is respectfully submitted that the §103 rejections of Claims 6, 9 and 20 based in whole or in part on Hazelton '185 and Amblard are defective, and each fail to properly establish a prima facie case of

obviousness. As a result, it is respectfully submitted that the §103 rejections of Claims 6, 9 and 20 are each incomplete and improper, and must be withdrawn.

Dependent Claims

Claims 2-5 and 7-8, Claims 10-14, Claims 16-19 and Claims 21-27 respectively depend from Claim 6, Claim 9, Claim 15 and Claim 20, and are also believed to be allowable over the art of record, for example for the same reasons discussed above in association with Claims 6, 9, 15 and 20, respectively.

Conclusion

Based on the foregoing, it is respectfully submitted that all of the pending claims are fully allowable, and favorable reconsideration of this application is therefore respectfully requested. If the Examiner believes that examination of the present application may be advanced in any way by a telephone conference, the Examiner is invited to telephone the undersigned attorney at 972-739-8647.

Appl. No. 10/802,087
Reply to Office Action of October 5, 2009

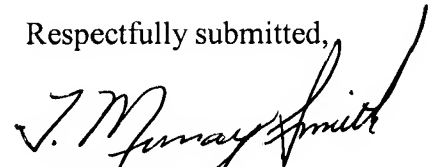
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Although Applicants believe that no additional fees are due, the Commissioner is hereby authorized to charge any fees required by this paper, or to credit any overpayment, to Deposit Account No. 08-1394 of Haynes and Boone, LLP.

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Enclosures: Informal English Translation of WO99/49504

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